



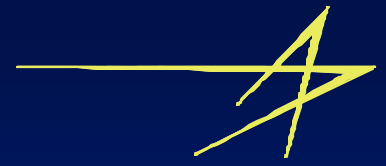
Lessons Learned from a CMMISM Pilot

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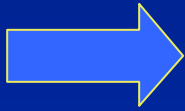
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Agenda



- **Background**
- **Lessons Learned**
- **Summary**

Background - 1



- **Pilot conducted at Lockheed Martin Systems Integration (LMSI) in Owego, NY in May 2001**
 - **Part of the CMMISM Phase II Pilot Program**
- **SCAMPISM V1.0 Pilot performed for Target Profile 3 of the CMMISM-SE/SW/IPPD, V1.02, Continuous Representation**
 - **9-member appraisal team from LMSI and 3 other Lockheed Martin companies, as well as the SSRC**
 - **4-member observer team from the CMMISM Project, DCMA, and LMSI**
 - **New appraisal techniques tested in recent SCAMPISM Pilots were not ready for testing at the time of this pilot. This SCAMPISM Pilot was conducted essentially like a CBA IPI.**

Background - 2

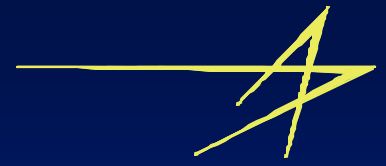


- **Follow-on document review of the Organization Standard Process performed for the remaining Level 4 and 5 Process Areas and Generic Practices (GPs)**
 - 6-member subset of the SCAMPISM Pilot appraisal team

SCAMPISM Pilot Scope and Statistics

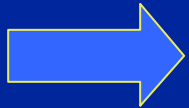


- **20 Process Areas appraised through Capability Level 3**
- **3 projects from 2 LMSI Business Areas appraised**
- **54 employees interviewed**
- **1,325 artifacts / items of objective evidence provided for review**
- **492 validated “findings-like” observations**
- **12 days (7 - 16+ hour days)**
 - **5 team members also worked a few hours on one weekend**



Agenda

- Background



- **Lessons Learned**

- Summary



Lessons Learned - Overview

- **Types:**
 - Things that worked well in the appraisal
 - Things that could be improved
- **Sources:**
 - Interview participants
 - Site coordination team
 - Appraisal team
- **Categories:**
 - CMMISM model
 - Appraisal readiness
 - SCAMPISM method

Lessons Learned: CMMISM Model - 1



- **The model has many threads and interrelationships**
 - **Performance in a Process Area with a related Generic Practice can affect the Capability Level ratings for other Process Areas**
 - **Project Planning (PP) and GP 2.2**
 - **Organizational Training (OT) and GP 2.5**
 - **Configuration Management (CM) and GP 2.6**
 - **PP, Project Monitoring and Control (PMC), Integrated Project Management (IPM), and GP 2.7**
 - **PMC, Measurement and Analysis (MA), and GP 2.8**
 - **Process and Product Quality Assurance (PPQA) and GP 2.9**
 - **MA, Organizational Process Definition (OPD), and GP 3.2**
 - **The differences between these inter-related Process Areas and GPs can also be difficult to convey in the standard appraisal interview setting**



Lessons Learned: CMMISM Model - 2

- **The Product Integration, Verification, and Validation Process Areas can be problematic**
 - Practices in these Process Areas are worded very similarly
 - Many projects do not implement these processes separately
 - Objective evidence may not be clearly separated for these processes on some projects
 - Also a GP 3.2 issue
 - Interview participants may not think of these as separate processes
 - Both appraisal team members and interview participants need to understand these Process Areas, their differences, and how they are implemented on the appraised projects



Lessons Learned: CMMISM Model - 3

- **Additional interrelationships and “issues”**
 - Nuances in Integrated Project Management (IPM) Goals 3 and 4 (the “IPPD Goals”) and Integrated Teaming (IT) may be difficult to convey to interview participants
 - Some overlap between these two Process Areas (IPM SG 4 and IT)
 - An organization’s mental concepts of IPPD and “shared vision” may differ from or not cover all elements of these as set forth in the CMMISM model, e.g., human factors
 - “Shared vision context” in IPM SP 3.1 versus “shared vision” in IPM SP 3.2 – Questions sounded redundant
 - Risk Management (RSKM) and Decision Analysis and Resolution (DAR) are extremely detailed – Questions seemed redundant
 - The phrase “technical data package” in Technical Solution (TS) SP 2.2 is open to numerous interpretations

Lessons Learned: CMMISM Model - 4



- **Organizational Environment for Integration (OEI)**
 - This Process Area requires the participation of organizational functions and personnel not typically included in previous SW or SE process improvement efforts and appraisals
 - **Information Technology Personnel:**
 - SP 1.2, Establish an Integrated Work Environment
 - **Human Resources Personnel:**
 - SP 2.2, Establish Incentives for Integration
 - SP 2.3, Establish Mechanism to Balance Team and Home Organization Responsibilities
 - The processes for these functions may not be part of the set of Organization Standard Processes related to most other Process Areas

Lessons Learned: CMMISM Model - 5



- **Organizational Process Performance (OPP) and Quantitative Project Management (QPM) are highly intertwined**
 - The selection of organizational processes, measures, and objectives in OPP affects the selection of project objectives and of sub-processes to be statistically managed in QPM, and vice versa
 - The data collected in QPM feeds into the process performance baselines and models in OPP, while these baselines and models in OPP provide initial process performance estimates for new projects in QPM
 - The “bar has been raised” for Level 4 with the expectation of process performance models in addition to baselines
 - QPM and OPP support implementation of GPs 4.1 and 4.2 in other Process Areas

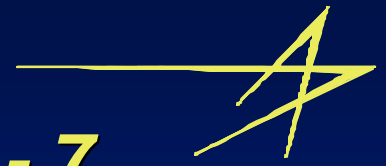
Lessons Learned: CMMISM Model - 6



- **Organizational Innovation and Deployment (OID)**
 - Intent is for a cultural shift for process improvement, from primary responsibility of a process group in Organizational Process Focus (OPF) to empowerment of the entire organization, while still maintaining control of process improvement
 - Intent is not conveyed well in V1.02
 - Has lost the continual process improvement aspect of the SW-CMM[®] at Level 5
 - Supports implementation of GP 5.1 for other Process Areas

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Lessons Learned: CMMISM Model - 7



- **Causal Analysis and Resolution (CAR)**
 - Supports implementation of GP 5.2 for other Process Areas
 - However, it also may be implemented on processes that have not been quantitatively managed (i.e., CL4)

Lessons Learned: Appraisal Readiness - 1

- **The planning and preparation phases are even more critical than before**
 - **Focus project and interview participant selection may be more time-consuming**
 - **To ensure coverage of the model scope and life cycle**
 - **Lessons learned from the pilots or previous appraisals may be useful to add to Appraisal Participant Briefings**
 - **Terminology and conceptual issues**
 - **Nuances resulting in seeming redundancy in questions**
 - **Interviews need to be scripted to minimize redundancy, “long-windedness”, as well as terminology “disconnects”**
 - **Pre-appraisal meetings to discuss model interpretation questions, perform document review, present organization and project overviews, and go over team logistics are especially beneficial**



Lessons Learned: Appraisal Readiness - 2

- **The appraisal team *MUST* be multi-disciplined (e.g., SE, SW)**
 - Broader life cycle coverage
 - IPPD requires a different approach from previous models and appraisal methods
- **Prior appraisal experience is a “BIG PLUS”... but**
 - Must beware of model interpretation pre-conceptions based on experience with the source models for the CMMISM
- **With the Continuous Representation of the model, knowledge of the Continuous Rating Methodology is a *MUST***
 - Base Practices (SP x.y-1) take on different aspects when the scope of the appraisal is at CL 2 or above



Lessons Learned: SCAMPISM - 1

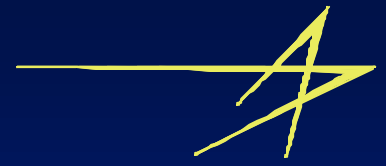
- **Group interviews with entire Integrated Product Teams – as opposed to the project managers and team leads – may be useful to appraise IPPD elements of the model**
- **The use of electronic media (online objective evidence, networked workstations, and the SEI's Observation Workbook) enhanced the appraisal process**
 - **However, the draft version of the SEI's CMMISM Appraisal Questionnaire (CAQ) was difficult to use**



Lessons Learned: SCAMPISM - 2

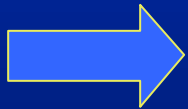
Feedback regarding recommendations for SCAMPISM improvement was collected from the interview participants and site coordination team, as well as the appraisal team, at the end of the SCAMPISM Pilot

- Several aspects of the new “focused investigation” approach were described as being preferred**
 - Documentation review conducted in a pre-onsite visit**
 - Interviews conducted at the participants’ work areas**
 - Less formal**
 - Discussion of documentation**
 - Ad hoc demonstrations**
 - More opportunity for clarification of questions and terminology**



Agenda

- Background
- Lessons Learned
- **Summary**



Summary



- **The CMMISM model is more complex than the SW-CMM[®] and EIA/IS 731.1**
 - Broader life cycle
 - Additional disciplines (e.g., IT and HR)
 - Terminology differences
 - Relationships between Process Areas and related Generic Practices
- **Appraisal planning, preparation, and conduct are more complex for many of the same reasons**
- **SCAMPISM improvements may be well-received by appraisal teams, as well as appraised organizations**



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Questions

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